Efficacy Trials - Injection Method

Knotweed

Polygonum Cuspidatum Sieb. & Zucc.

Submitted:	Clark County Weed Management
	Philip Burgess, Director
Focus:	Efficacy Results of Injection Method used on knotweed
Process:	Injection Method
Dates(s):	July 14, 2005
Location(s):	NE 155th Avenue, Clark County

Method of Control:

Tests were conducted using the following Methods:

Cut and fill, using 1 mL of Roundup Pro Concentrate at full strength
-- Canes were cut near top of 2nd segment.
Injection using 4 mL of Roundup Pro Concentrate at full strength
-- Injection into 2nd segment above ground
Injection, using 5 mL of Roundup Pro Concentrate at full strength
-- Injection into 2nd segment above ground

Treatment Notes

Amount	Results
1mL	Five plots were set up. Each cane was too small to inject. Taken together, six canes were cut and injected. These canes averaged 2.5 in height and 0.3 inches in diameter.
4mL	Three plots were set up. All canes within the plot were large enough to inject. Taken together, 30 canes were injected, about 8 feet in height and slightly less than 1 inch in diameter.
5mL	Four plots were set up. All canes within the plot were large enough to inject. Taken together, 49 canes were injected, about 9 feet in height and slightly more than 1 inch in diameter.

Control Results

Amount	Results
1mL	Plots were checked on August 1 -- All canes had turned dark brown On September 23 -- all canes were black. There was no regrowth
4mL	Plots were checked on August 1 -- All canes had turned brown and many leaves had dropped On September 23, all canes were dark brown to black
5mL	Plots were checked on August 1 -- All canes had turned brown and many leaves had dropped On September 23, all canes were dark brown to black.

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Non-target Effect	
Amount	**Effects**
1mL	No visible signs of damage.
4mL	No visible signs of damage to neighboring native vegetation; alder, salmonberry, and sword fern.
5mL	No visible signs of damage to neighboring native vegetation

Conclusion/Recommendations

1 mL Plots -- During most knotweed control projects thus far, the small canes have been sprayed. The foliar application is efficient, but may not be suitable for all sites, particularly where native vegetation is close.
If there is little spring regrowth in these plots, cut and injection may be considered a good alternative. Spring data collection and replication of the study are needed for confirmation.

4 mL Plots -- There does not appear to be any measurable visual difference between 5 mL and 4 mL dosage.
If spring regrowth counts give similar results, 4 mL may be a good recommendation.
Spring data collection of the study are needed for confirmation.

5 mL Plots -- It is likely that RPC will be a highly effective herbicide for the knotweed injection method. In addition, RPC appears to achieve browning of above-ground material more quickly than Aquamaster.

Efficacy Trial Results On Knotweed

1mL Roundup Pro Concentrate

Site name	NE 155th Avenue, Clark County
Address	NE 155th Avenue
Plot #	**1 mL Plots**
Reference #	
Treatment Date	**July 14, 2005**
Treatment Method:	
Method	Cut and fill, using injection tool
Herbicide	RoundUp Pro Concentrate
Injection Dosage	**1 mL**
Area:	
Area Treated	
Total number of plants in area (rhizomic connection?)	n/a
Number of plants/stems actually treated	6
Plant Phenology:	
Plant phenology	Pre-flower, short immature plants with thin canes
Typical plant height	30"
Typical plant stem diameter	0.3"
Follow-up & Observations:	
Date	**August 1, 2005**
Observations	All canes have turned brown/black.
Date	**September 23, 2005**
Observations	No regrowth -- No damage to neighboring plants
Control percentage:	
Of plants/stems treated--Number controlled	6
Control percentage	100%
Number Plants Controlled:	
Total # of plants controlled (rhizomic connection?)	n/a
Notes:	
Good control of thin immature canes - Need spring monitoring -- Normally, these smaller plants are sprayed in control efforts. If large numbers of small plants, spray is best, but cut and fill may work when needing a more delicate application.	

Efficacy Trial Results On Knotweed ***4mL Roundup Pro Concentrate***	
Site name	NE 155th Avenue, Clark County
Address	NE 155th Avenue
Plot #	**4 mL Plots**
Reference #	
Treatment Date	**July 14, 2005**
Treatment Method:	
Method	Injection, 2nd segment above ground
Herbicide	RoundUp Pro Concentrate
Injection Dosage	**4 mL**
Area:	
Area Treated	
Total number of plants in area (rhizomic connection?)	n/a
Number of plants/stems actually treated	30
Plant Phenology:	
Plant phenology	
Typical plant height	8'
Typical plant stem diameter	0.9"
Follow-up & Observations:	
Date	**August 1, 2005**
Observations	All canes have turned brown No noticeable difference compared to 5 mL
Date	**September 23, 2005**
Observations	All canes dark brown or black No injury to neighboring alder, salmonberry, sword fern
Control percentage:	
Of plants/stems treated--Number controlled	30
Control percentage	100%
Number Plants Controlled:	
Total # of plants controlled (rhizomic connection?)	n/a
Notes:	
Better choice, if spring data shows no difference compared to 5 mL	

Efficacy Trial Results On Knotweed ***5mL Roundup Pro Concentrate***	
Site name	NE 155th Avenue, Clark County
Address	NE 155th Avenue
Plot #	**5 mL Plots**
Reference #	
Treatment Date	**July 14, 2005**
Treatment Method:	
Method	Injection, 2nd segment above ground
Herbicide	RoundUp Pro Concentrate
Injection Dosage	**5 mL**
Area:	
Area Treated	
Total number of plants in area (rhizomic connection?)	n/a
Number of plants/stems actually treated	49
Plant Phenology:	
Plant phenology	
Typical plant height	9'
Typical plant stem diameter	1.1"
Follow-up & Observations:	
Date	**August 1, 2005**
Observations	All canes have turned brown Many leaves have fallen
Date	**September 23, 2005**
Observations	All canes dark brown or black No injury to neighboring alder, salmonberry, sword fern
Control percentage:	
Of plants/stems treated--Number controlled	49
Control percentage	100%
Number Plants Controlled:	
Total # of plants controlled (rhizomic connection?)	n/a
Notes:	
Excellent die-back	

Efficacy Trial Results On Knotweed

NE 155th Avenue

Plot #		mL	# Canes	Cane Ht (ft)		Diameter (in)		INJ* on 7/14	Dead on 9/23	% Control
1		4	10	9.0		0.75		10	10	100%
2		1	1	1.5		0.25		1	1	100%
3		1	1	3.0		0.31		1	1	100%
4		1	1	3.5		0.38		1	1	100%
5		4	12	8.0		1.00		12	12	100%
6		5	6	8.0		1.25		6	6	100%
7		5	8	9.0		1.00		8	8	100%
8	a	5	12	7.0		0.75		12	12	100%
8	b	1	1	1.0		0.25		1	1	100%
9		1	2	3.0		0.31		2	2	100%
10		5	23	10.0		1.25		23	23	100%
11		4	8	7.0		1.00		8	8	100%

Plot #		mL	# Canes	Cane Ht (ft)		Diameter (in)		INJ* on 7/14	Dead on 9/23	% Control
6		5	6	8.0	48.0	1.25	7.50	6	6	100%
7		5	8	9.0	72.0	1.00	8.00	8	8	100%
8	a	5	12	7.0	84.0	0.75	9.00	12	12	100%
10		5	23	10.0	230.0	1.25	28.75	23	23	100%
					434.0		53.25			

5 mL		Avg Cane Ht		Avg Diameter		Total INJ	Total Dead
		8.9		1.09		49	49

Plot #		mL	# Canes	Cane Ht (ft)		Diameter (in)		INJ* on 7/14	Dead on 9/23	% Control
1		4	10	9.0	90.0	0.75	7.50	10	10	100%
5		4	12	8.0	96.0	1.00	12.00	12	12	100%
11		4	8	7.0	56.0	1.00	8.00	8	8	100%
					242.0		27.50			

4 mL		Avg Cane Ht		Avg Diameter		Total INJ	Total Dead
		8.1		0.92		30	30

Plot #		mL	# Canes	Cane Ht (ft)		Diameter (in)		INJ* on 7/14	Dead on 9/23	% Control
2		1	1	1.5	1.5	0.25	0.25	1	1	100%
3		1	1	3.0	3.0	0.31	0.31	1	1	100%
4		1	1	3.5	3.5	0.38	0.38	1	1	100%
8	b	1	1	1.0	1.0	0.25	0.25	1	1	100%
9		1	2	3.0	6.0	0.31	0.62	2	2	100%
					15.0		1.81			

1 mL		Avg Cane Ht		Avg Diameter		Total INJ	Total Dead
		2.5		0.30		6	6

*(*small canes treated by cut/fill method, using injection gun)*